

Risk Factors of Saudi Asthmatic Patients Less Than 12 Years Old in Maternity and Children's Hospital

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Abstract:

Asthma is a common chronic inflammatory disease of the airways characterized by variable and recurring symptoms, reversible airflow obstruction and bronchospasm, and it can be divided into extrinsic-implying a definite external cause and intrinsic - when no causative agent can be identified. The extrinsic type starts in childhood. Facility- based descriptive case series study including qualitative research approaches study will be conducted in Maternity and Children's Hospital to identify the common risk factor that lead to bronchial asthma among children's. Sampling by selective sampling techniques will be using for the selection of 50 Saudi asthmatic files for children's less than 12 year old. The data will be collected by structured interview questionnaire (multiple choice questions), the check lists. Data processing and analysis will be done by entering the data into SPSS for Windows. After analysis of data exposed that the genetic has a relationship with the bronchial Asthma disease as it affect 70% of asthmatic children and just 30% are not affected, the chronic obstructive pulmonary disease are commonly seen in asthmatic children as it affect 66%,while not found in 34%, the nocturnal asthma are absent in 20%, occur 1 to 2 times per week in 46%and 4 or more times per week in 34%, The environmental affect 76% and not affect 24% of asthmatic children in maternity and children's hospital, the exercise exacerbated asthma in 70% and not exacerbated in 30%, the affect of paracetamol and beta blocker on asthmatic children's in maternity and children hospital with 80% are affected, while 20% not affected.

1. Introduction:

1.1) Definition

Asthma is a common chronic inflammatory disease of the airways characterized by variable and recurring symptoms, reversible airflow obstruction and bronchospasm. Common symptoms include wheezing, coughing, chest tightness, and shortness of breath, often worse at night. It is characterized by *airflow limitation* which is usually reversible spontaneously or with treatment, *airway hyper-responsiveness* to a wide range of stimuli, and *inflammation of the bronchi* with immune system cells that leading to edema, marked smooth muscle hypertrophy and mucus plugging.⁽¹⁾

1.2) Statement and analysis:

Many environmental factors have been associated with asthma's development and exacerbation including allergens, air pollution, and other environmental chemicals. Smoking during pregnancy and after delivery is associated with a greater risk of asthma-like symptoms. Low air quality from factors such as traffic pollution or high ozone levels has been associated with both asthma development and increased asthma severity. Exposure to indoor volatile organic compounds may be a trigger for asthma; formaldehyde exposure, for example, has a positive association. There is an association between paracetamol

(acetaminophen) use and asthma but it is unclear if it has a role in causing asthma.^(2,3)

Genetics that may associated with asthma: Family history is a risk factor for asthma, with many different genes being implicated. If one identical twin is affected, the probability of the other having the disease is approximately 25%. By the end of 2005, 25 genes had been associated with asthma in six or more separate populations, including GSTM1, IL10, CTLA-4, SPINK5, LTC4S, IL4R and ADAM33, among others. Many of these genes are related to the immune system or modulating inflammation. Even among this list of genes supported by highly replicated studies, results have not been consistent among all populations tested. Some genetic variants may only cause asthma when they are combined with specific environmental exposures. An example is a specific single nucleotide polymorphism in the CD14 region and exposure to endotoxin (a bacterial product). Endotoxin exposure can come from several environmental sources including tobacco smoke, dogs, and farms. Risk for asthma, then, is determined by both a person's genetics and the level of endotoxin exposure.^(3,4)

The environmental exposure to allergens, viral infections, pollutants, drugs, and occupational agents. These factors can be classified as indoor or outdoor allergens and occupational sensitizers.

Indoor allergens and air pollutants: There is a wide spectrum of indoor allergens that includes domestic mites, furred animals, cockroaches, and fungi. Most of the interventions to reduce exposure to these triggers will enhance the asthma control. The most important indoor air pollutant is related to tobacco exposure. Measures to avoid tobacco exposure will lead to better asthma control and avoidance of long-term lung function impairment.

Outdoor allergens: Outdoor allergens such as pollens and molds are impossible to avoid completely. Exposure may be reduced by closing windows and doors, remaining indoors during dust storms and initial raining seasons, and using air conditioning if possible. It is recommended to avoid outdoor strenuous physical activities in cold weather.⁽⁵⁾

Exercise induced asthma EIA: The term "exercise-induced asthma" is often used to describe episodic bronchoconstriction following exercise in asthmatic patients. This wording is potentially misleading, since exercise is not an independent risk factor for asthma, but rather a trigger of bronchoconstriction in patients with underlying asthma. In fact, there is some speculation that decreased physical activity is a risk factor for asthma, and that exercise may be helpful in preventing the onset of asthma in children. The estimated prevalence of EIB varies from 7 to more than 20 percent in the general population. In comparison, up to 80 percent of patients with symptomatic asthma have some degree of EIB. The magnitude of EIB is most strongly correlated with the underlying degree of airway hyperresponsiveness and the presence of airway inflammation, as measured by the number of airway eosinophils. Thus, in many patients with mild, episodic asthma, minimally increased airway responsiveness, and mild airway inflammation, even strenuous exercise does not cause clinically significant bronchoconstriction. Minute ventilation rises with exercise. EIB probably results from changes in airway physiology triggered by the large volume of relatively cool, dry air inhaled during vigorous activity. This is supported by the finding that EIB is attenuated when the inspired gas is more fully humidified and closer to body temperature.^(6,7)

Medication that can worsen asthma include, NSAIDs, particularly aspirin and propionic acid derivatives, e.g. indometacin, have a major role in the development and precipitation of attacks in approximately 5% of patients with asthma. This effect is especially prevalent in those individuals who have both nasal polyps and asthma. There is no direct sympathetic innervations of the smooth muscle of the bronchi, and antagonism of parasympathetic ally induced bronchoconstriction is critically dependent upon circulating epinephrine (adrenaline) acting through β_2 -receptors on the surface of smooth muscle cells. Inhibition of this effect by β -adrenoceptor-blocking drugs such as

propranolol leads to bronchoconstriction and airflow limitation, but only in asthmatic subjects drugs leads to an imbalance in the metabolism of arachidonic acid.^(8,9)

1.3) Background global and local:

1) Global:

Asthma affects approximately 10 million people in the U.S.A. The most common populace is children's under the age of ten. This disease has had an increased occurrence of over 29% within the last twelve years. United States mortality rates have also increased by a staggering 31%, with blacks requiring hospitalization twice as often as whites. **ISAAC, (The International Study of Asthma and Allergies)** in Childhood, is a unique worldwide epidemiological research programme established in 1991 to investigate asthma, rhinitis and eczema in children due to considerable concern that these conditions were increasing in western and developing countries. ISAAC has become the largest worldwide collaborative research project ever undertaken, involving more than 100 countries and nearly 2 million children and its aim is to develop environmental measures and disease monitoring in order to form the basis for future interventions to reduce the burden of allergic and non-allergic diseases, especially in children in developing countries. The ISAAC findings have shown that these diseases are increasing in developing countries and that they have little to do with allergy, especially in the developing world. Further population studies are urgently needed to discover more about the underlying mechanisms of non-allergic causes of asthma, rhinitis and eczema and the burden of these conditions.^(10,11)

2) Local:

Asthma is one of the most common chronic illnesses in Saudi Arabia and local reports suggest that the prevalence of asthma is increasing. Despite the abundance of high-caliber medical services and the availability of international guidelines, recent studies have shown that the burden of asthma might be significantly higher than previously estimated. Poor knowledge, fear of use of new drugs, and the lack of awareness of the importance of controlling of the disease are common among primary care physicians who care for asthma patients in the Kingdom of Saudi Arabia (KSA). These are all important factors that likely contribute to the magnitude of this burden. Consequently, many asthma patients continue to be under-diagnosed, under-treated, and are at a risk of acute exacerbations resulting in missing work or school, increased use of expensive acute healthcare services, and reduced quality of life. A recent asthma control survey showed that only 5% of patients were controlled, 31% were partially controlled, and 64% were uncontrolled. Two populations of school children of age group between 8 and 16 years were studied using an internationally designed protocol in 1986 and 1995. Comparison of the data of Riyadh versus Hail (an inland

desert with dry environment) and Jeddah versus Gizan (a coastal humid environment) revealed that the prevalence of asthma in similar populations increased significantly from 8% in 1986 to 23% in 1995. The study also revealed that there was increased exposure to environmental factors such as tobacco smoke and indoor animals in Saudi houses, which can also play a role. The prevalence in Yanbu and in the villages of Al-Furash and Al-Gafure was 13.9% and 8%, respectively. Hijazi conducted a study of 1020 urban and 424 rural children aged 12 years. They attempted to compare the prevalence of allergic symptoms among those living in urban and rural areas of the KSA and to investigate factors associated with any differences found. Males were more susceptible to have certain respiratory symptoms and females had more eye and skin symptoms. The educational level and occupation of the father did not influence the likelihood of having symptoms.⁽¹²⁾

1.4) Rational:

- Asthma has become more common in children around ksa in recent decades.⁽¹³⁾
- Increasing the prevalence of asthma has been associated with an increase in atopic sensitization, and is paralleled by similar increases in other allergic disorders such as eczema and rhinitis.⁽¹³⁾
- Asthma is one of the leading causes of hospital admission in children.⁽¹³⁾
- Asthma has become a cause of absenteeism of work and school.

2. Objectives:

2.1) General:

To review files of Saudi asthmatic children less than 12 years old in Maternity and Children's Hospital (M.C.H) in Najran from April to May 2014 to identify the common risk factors of bronchial asthma.

2.2) Specific:

- 1) To identify the relationship between chronic obstructive pulmonary diseases and bronchial asthma. As (emphysema)
- 2) To describe the relationship of exercise and bronchial asthma.
- 3) To estimate the impact of nocturnal asthma on the performance of academic as absenteeism.
- 4) To demonstrate the efficacy of environmental measures in management of atopic asthma in children.
- 5) To clarify the effect of beta blocker and paracetamol on bronchial asthma.
- 6) To explain the relationship between genetics and bronchial asthma.

3. Literature review:

3.1) Bronchial Asthma:

3.1.1) Definition:

Asthma, which occurs in adult and pediatric patients, is a chronic inflammatory disorder of the airways characterized by an obstruction of airflow. Among children and adolescents aged 5-17 years, asthma accounts for a loss of 10 million school days annually and costs caretakers \$726.1 million per year because of work absence.⁽¹⁴⁾

3.1.2) Signs and symptoms:

History

The clinician should establish whether the patient has any of the following symptoms:

- Wheezing: A musical, high-pitched whistling sound produced by airflow turbulence is one of the most common symptoms of asthma. The wheezing is usually during exhalation.
- Cough: Usually, the cough is nonproductive and nonparoxysmal; coughing may be present with wheezing
- Cough at night or with exercise: Coughing may be the only symptom of asthma, especially in cases of exercise-induced or nocturnal asthma; children with nocturnal asthma tend to cough after midnight, during the early hours of morning
- Shortness of breath
- Chest tightness: A history of tightness or pain in the chest may be present with or without other symptoms of asthma, especially in exercise-induced or nocturnal asthma

Sputum production

In an acute episode of asthma, symptoms vary according to the episode's severity. Infants and young children suffering a severe episode display the following characteristics:

- Breathless during rest
- Not interested in feeding
- Sit upright
- Talk in words (not sentences)
- Usually agitated

With imminent respiratory arrest, the child displays the aforementioned symptoms and is also drowsy and confused. However, adolescents may not have these symptoms until they are in frank respiratory failure.⁽¹⁴⁾

3.1.3 Epidemiology:

A wide global variation exists in the prevalence of asthma. Asthma is the most common chronic disease in childhood in first world countries. Recurrent asthma-like symptoms were reported in approximately 32 percent of preschool children

in the United States and Europe. Epidemiologic data estimate that nearly seven million children in the United States are diagnosed with asthma.

Data from the Centers for Disease Control (CDC)-based National Center for Health Statistics showed an increase in asthma prevalence from 1980 to 1996 of greater than 50 percent. The largest increase was seen in persons younger than 18 years. The CDC's 2006 National Health Interview Survey estimated a lifetime asthma prevalence of 13.5 percent. The estimated current asthma prevalence in general increased between 2001 and 2009, and was 9.6 percent among children ≤ 18 years in 2009. Asthma attack rates in the previous 12 months remained level between 1997 and 2009. The prevalence of asthma appears to have plateaued in other countries as well.^(14,15)

3.1.4 Classification:

Asthma can be divided into, extrinsic - implying a definite external cause, and intrinsic one.

Extrinsic asthma occurs most frequently in atopic individuals who show positive skin-prick reactions to common inhalant allergens. Positive skin-prick tests to inhalant allergens are shown in 90% of children and 50% of adults with persistent asthma. Childhood asthma is often accompanied by eczema. An overlooked cause of late-onset asthma in adults is sensitization to chemicals or biological products in the workplace.

Intrinsic asthma often starts in middle age ('late onset'). Nevertheless, many patients with adult-onset asthma show positive skin tests and on close questioning give a history of respiratory symptoms compatible with childhood asthma.

Non-atopic individuals may develop asthma in middle age from extrinsic causes such as sensitization to occupational agents or aspirin intolerance, or because they were given β -adrenoceptor-blocking agents for concurrent hypertension or angina. Extrinsic causes must be considered in all cases of asthma and, where possible, avoided.^(14,15)

3.1.5 Pathogenesis and etiology:

Interactions between environmental and genetic factors result in airway inflammation, which limits airflow and leads to functional and structural changes in the airways in the form of bronchospasm, mucosal edema, and mucus plugs. Airway obstruction causes increased resistance to airflow and decreased expiratory flow rates. These changes lead to a decreased ability to expel air and may result in hyperinflation. The resulting overdistention helps maintain airway patency, thereby improving expiratory flow; however, it also alters pulmonary mechanics and increases the work of breathing. Hyperinflation compensates for the airflow obstruction, but this compensation is limited when the tidal volume approaches the volume of the pulmonary

dead space; the result is alveolar hypoventilation. Uneven changes in airflow resistance, the resulting uneven distribution of air, and alterations in circulation from increased intra-alveolar pressure due to hyperinflation all lead to ventilation-perfusion mismatch. Vasoconstriction due to alveolar hypoxia also contributes to this mismatch. Vasoconstriction is also considered an adaptive response to ventilation/perfusion mismatch. In the early stages, when ventilation-perfusion mismatch results in hypoxia, hypercarbia is prevented by the ready diffusion of carbon dioxide across alveolar capillary membranes. Thus, patients with asthma who are in the early stages of an acute episode have hypoxemia in the absence of carbon dioxide retention. Hyperventilation triggered by the hypoxic drive also causes a decrease in PaCO₂. An increase in alveolar ventilation in the early stages of an acute exacerbation prevents hypercarbia.^(15,16)

Role of inflammation

Chronic inflammation of the airways is associated with increased BHR, which leads to bronchospasm and typical symptoms of wheezing, shortness of breath, and coughing after exposure to allergens, environmental irritants, viruses, cold air, or exercise. In some patients with chronic asthma, airflow limitation may be only partially reversible because of airway remodeling (hypertrophy and hyperplasia of smooth muscle, angiogenesis, and subepithelial fibrosis) that occurs with chronic untreated disease.

Airway hypersensitivity:

Bronchial hyperresponsiveness can be demonstrated by asking the patient to inhale gradually increasing concentrations of either histamine or methacholine (bronchial provocation tests). This induces transient airflow limitation in susceptible individuals (approximately 20% of the population); the dose of the agonist (provocation dose) necessary to produce a 20% fall in FEV₁ is known as the PD₂₀ FEV₁ (or PC₂₀ FEV₁). Patients with clinical symptoms of asthma respond to very low doses of methacholine; i.e. they have a low PD₂₀ FEV₁ (< 11 μ mol).

Precipitating factors:

Gender:

There are clear-cut gender differences in the prevalence of asthma. Childhood asthma tends to be a predominantly male disease, with the relative male predominance being maximal at puberty. After age 20, the prevalence remains approximately equal until age 40, when the disease becomes more common in females.

Allergen exposure:

A consensus is emerging that indoor allergens play a significant role in the development of asthma, although it has been difficult to demonstrate a causative relationship, and the majority of these studies were performed on high

risk groups. At least one prospective study of allergen exposure in early childhood, carried out with a cohort from the general population, found that although a minimum threshold level of allergen was necessary for sensitization or asthma to develop, there was no dose-response relationship above that level.

Rhinitis:

Adults with rhinitis are at greater risk than those without rhinitis for developing adult-onset asthma. This was best demonstrated in a prospective multicenter study of 6461 adults, aged 20 to 44 years. Subjects were randomly chosen from the general population, and a cohort without asthma was evaluated with questionnaires, allergen skin testing, serum specific and total IgE, pulmonary function testing, and bronchial responsiveness testing. Subjects were divided into four groups and followed for a mean period of 8.8 years.

End toxin exposure:

Endotoxins are inflammatory lipopolysaccharide molecules from gram-negative bacteria that are ubiquitous in the environment. Determinants of endotoxin in homes include both indoor sources (eg, pets, pests, humidifiers, kitchen compost bins) and outdoor air.

Occupational exposure:

The European Community Respiratory Health Surveys (ECRHS and ECRHS-II) identified several occupations that are associated with an increased risk of new onset asthma; nursing and cleaning were responsible for the most cases. [Inhalational accidents (eg, fires, mixing cleaning agents, industrial spills) were also associated with an increased risk of new onset asthma.

Pollution:

Outdoor - There is a known correlation between levels of air pollution and lung disease, but the association between air pollution and asthma is less clear. As an example, in a study of six cities in the United States, there was a direct relationship between the levels of particulate pollution and reported rates of chronic cough and bronchitis. There was no association between particulate concentration and asthma, persistent wheeze, or hay fever.

Indoor - Gas stoves are the primary source of indoor NO₂. It is estimated that more than half of the households in the United States use gas stoves; thus, a large number of adults and children may be chronically exposed to NO₂.

Obesity:

Age-adjusted prevalence rates for asthma and obesity are increasing in the United States. Experimental models, prospective cohort studies, population-based case-control studies, and a meta-analysis suggest that patients with an elevated BMI are at increased risk for developing asthma.

This risk may be greater for nonallergic asthma than allergic asthma.

Cold and exercise:

Most asthmatics wheeze after prolonged exercise. Typically, the attack does not occur while exercising but afterwards. The inhalation of cold, dry air will also precipitate an attack. Exercise-induced wheeze is driven by histamine and leukotrienes which are released from mast cells when the epithelial lining fluid of the bronchi becomes hyperosmolar owing to drying and cooling during exercise.

Medication:

Acetaminophen - Paracetamol use has been postulated to be a risk for asthma because this agent induces depletion of the antioxidant glutathione in lung tissue. As a result, oxidative damage may occur, prostaglandin E₂ production increases, and Th₂ processes may be promoted. Conflicting results have been reported in population based studies of acetaminophen/paracetamol use and asthma.

3.1.6 Investigation:

There is no specific diagnostic test for asthmatic patients.

Pulmonary function testing - Tests of airflow limitation are critical tools in the diagnosis of asthma. A detailed discussion of a wider range of pulmonary function tests used in the diagnosis of asthma and other causes of shortness of breath is presented separately.

Spirometry - Spirometry, in which a maximal inhalation is followed by a rapid and forceful complete exhalation into a spirometer, includes measurement of forced expiratory volume in one second (FEV₁) and forced vital capacity (FVC). These measurements provide information that is essential to the diagnosis of asthma. We obtain baseline spirometry in virtually all patients with a suspected diagnosis of asthma.

3.1.7 Management:

Asthma is extremely common and causes considerable morbidity. The aims of treatment are to:

- Abolish symptoms.
- Restore normal or best possible lung function.
- Reduce the risk of severe attacks.
- Enable normal growth to occur in children.
- Minimize absence from school or employment.

This involves:

- Patient and family education about asthma.
- Patient and family participation in treatment.
- Avoidance of identified causes where possible.

Use of the lowest effective doses of convenient medications to minimize short-term and long-term side-effects.

Drug treatment:

The mainstay of asthma therapy is the use of therapeutic agents delivered as aerosols or powders directly into the lungs. The advantages of this method of administration are that drugs are delivered direct to the lung and the first-pass metabolism in the liver is avoided; thus lower doses are necessary and systemic unwanted effects are minimized.

4. Method and material:**1-study design:**

This is a facility- based descriptive case series study including qualitative research approaches will be conducted in Maternity and Children's Hospital to identify the common risk factor that lead to bronchial asthma among children's.

2-Study area:

The study will be in Maternity and Children's Hospital that has 10 squares in Alathayebh district. Alathayebh district area is bounded by Prince Michal district to the south while to north it is bounded by Al Aerysh district, to the east is the King Abdul-Aziz street, and to the west is the area for security forces. Najran city climate is hot during the summer months with an average 33degree and mild during the winter months. The temperature in winter drop to an average of 8 degree, and generally during most of the seasons there will be a dusty atmosphere. Najran population are about 1,624,000individuals in (2012) ⁽²⁶⁾.

The population in ksa has a good customs as good dealing with each other and with visitor also they have tendency to help each other but, unfortunately don't take care for their health status as there is no attention in food selection also they don't visit the primary health care continuously.

3-Study population:

They will be the Saudi children's (male and female) with bronchial asthma in Maternity and Children's Hospital in Najran City ,who their age less than 12 years, with exclusion for those who has metabolic disease, to identify the risk factors of bronchial asthma.

4. Sampling:

The study area will be in Maternity and Children's Hospital in Najran which is in residential area called Alathayebh in Najran City. Alathayebh area is bounded by Prince Michal district to the south while to north it is bounded by Al Aerysh district, to the east is the King Abdul-Aziz street, and to the west is area for security forces. Najran climate is hot during the summer months with an average 33degree and mild during the winter months. In Najran city there area1, 624,000individuals (14). The study population will be the Saudi children's (male and female) with bronchial asthma in Maternity and Children's Hospital in Najran City

,who their age less than 12years, to identify the common risk factors of bronchial asthma. . It is a qualitative research approaches based on the non-probability sampling by selective sampling techniques will be using for the selection of 50 Saudi asthmatic files for children's less than 12 year old.

5. Method of data collection:

The methods of data collection will involve, structural interview (questionnaire and check list).

In the structural interview I will use the Questionnaires, and the Check lists, which will be filled by the selective of all the asthmatic children who visit the maternity and children's hospital on the period from April to May 2004.

6. Data processing and analysis:

Data processing and analysis will be done by entering the data into SPSS software for Windows.

7. Study variable:

Dependent variable: bronchial asthma will be measure by looking for files that already diagnosed by treated doctor.

Independent variable:

1. Genetics: will be measure by ask question related to family history in questionnaire as is anyone of your family suffering from asthma?
2. Environmental: will be measure by assess general climate to Najran city.
3. Nocturnal asthma: will be measure by ask question related number of bad night as In last 4 weeks did weak because asthma?
4. Exercise: will be measure by ask question in questionnaire as is your asthma exacerbated by exercise?
5. Medication: will be measure by prescriptions that found in each file.

5. Result:

As shown in table 1 the chronic obstructive pulmonary disease are commonly seen in asthmatic children as it affect 66%,while not found in 34%.

The result found in table 2 showed that the nocturnal asthma are absent in 20%, occur 1 to 2 times per week in 46%and 4 or more times per week in 34%.

As shown in table 3 the genetic has a relationship with the bronchial Asthma disease as it affect 70% of asthmatic children and just 30% are not affected.

In the figure I the exercise exacerbated asthma in 70% and not exacerbated in 30%.

The environmental affect 76% and not affect 24% of asthmatic children in maternity and children's hospital. (Figure ii)

In the figure iii explain the affect of paracetamol and beta blocker on asthmatic children's in maternity and children hospital with 80%are affected, while 20% not affected.

In the figure iv shown the relationship between nocturnal asthma and environmental as the nocturnal asthma increase with (bad environmental) as it is occur 1-2times per week in 42% while the nocturnal asthma with normal environmental) is absent in 20 %.)

In the figure v shown that most asthmatic children become cure in age 18-22 years in about 42%, while 10% persistence for live.

Figure I: Relation between asthma and exercise among asthmatic children in maternity and children's Hospital

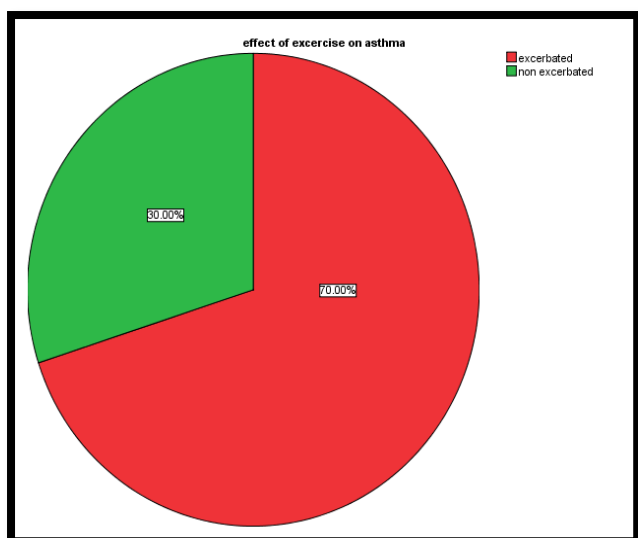


Figure II: Effect of environment on asthmatic children in maternity and children's Hospital.

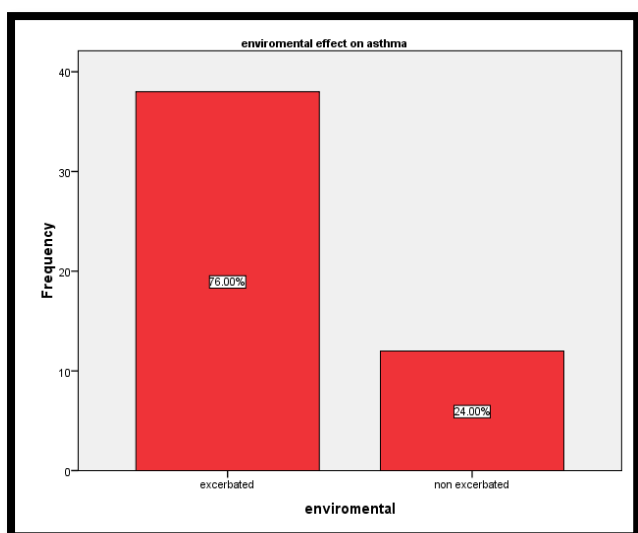


Figure III: The effect of paracetamol and beta blocker on asthmatic children in maternity and children's Hospital

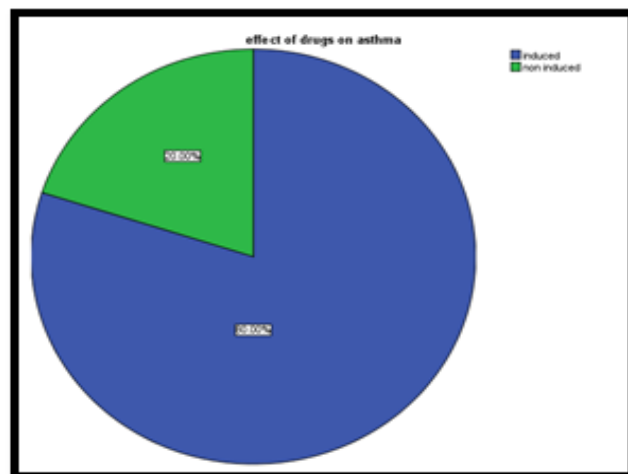


Figure IV: The relationship between nocturnal asthma and environmental on asthmatic children in Maternity and Children Hospital.

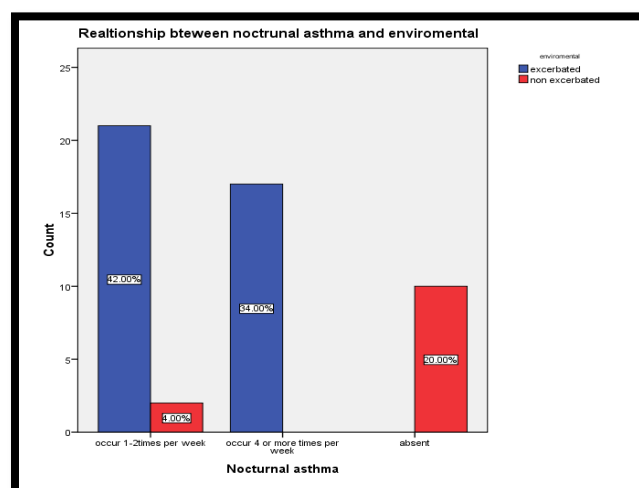


Figure V: Relation between age and cure on asthmatic children in Maternity and Children Hospital.

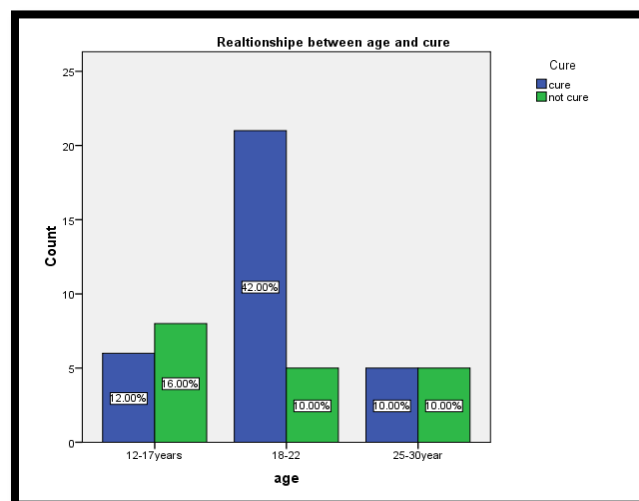


Table (1) Distribution of (chronic obstructive pulmonary disease) on asthmatic children in Maternity and Children's Hospital

Nocturnal asthma	Frequency	Percent
Present	33	66%
Absent	17	34%
Total	50	100%

Table (2) Nocturnal asthma among asthmatic children in Maternity and Children Hospital

Nocturnal asthma	Frequency	Percent
Occur 1 to 2 times /weeks	23	46%
Occur more than 4 times/week	17	34%
Absent	10	20%
Total	50	100%

Table (3) Genetics effect on asthmatic children in Maternity and Children's Hospital

Genetics	Frequency	Percent
Effect	35	70%
Non effect	15	30%
Total	50	100%

6. Discussion:

This study shown the genetic effect on asthmatic children as about 70% are affected by and 30% aren't affected, and this cause is prominent in Saudi Arabia generally as my study done in a part of Saudi Arabia and this is due to convergence of culture in Saudi population who having a common custom(consanguinity marriage). Although many studies have documented an increased prevalence of asthma in recent years, this is the first to report an increase in the prevalence of asthma in Saudi schoolchildren while In the United States, the prevalence of asthma in 6- to 11-year-old children increased from 4.8% in 1974 to 1976 to 7.5% in 1980 to 1984.

The nocturnal asthma are absent in 20%, occur 1 to 2 times per week in 46% and 4 or more times per week in 34%, and this result was predicted as any area in the world and the 20% who hasn't nocturnal asthma are well controlled by using the proper medication and avoiding to allergen exposure while those who get up 1 to 2 times per week are not well controlled although they intake the medication, but the percent of those who get up 4times and more per week are high and not correlated with many other studies in the Najran city and also world-wide.

As the environment affects 76% and not affects 24% of the asthmatic children in maternity and children's hospital they have sensitivity to many substances in the environment and

this cause can be correlated with genetics in sensitivity to this substances.

The exercise exacerbated the asthma in 70% and not exacerbated the asthma in 30%, and this percent is normal as the bronchial asthma is obviously exacerbated by the exercise.

Paracetamol and Beta blocker affect 80% as the airways have direct parasympathetic innervations that tends to produce bronchoconstriction. There is no direct sympathetic innervations of the smooth muscle of the bronchi, and antagonism of parasympathetic-ally induced bronchoconstriction is critically dependent upon circulating epinephrine (adrenaline) acting through β_2 -receptors on the surface of smooth muscle cells. Inhibition of this effect by β -adrenoceptor-blocking drugs such as propranolol leads to bronchoconstriction and airflow limitation, but only in asthmatic subjects. The effect of paracetamol is especially prevalent in those individuals who have both nasal polyps and asthma.

Chronic obstructive pulmonary disease (COPD) as emphysema and chronic bronchitis affect 66% of asthmatic children while, 34% are not affected that's mean the lung with COPD may have large area of destruction and cavity(bulla) in the airway so thesis cavity do not work well and cannot get air out causes the person to be very short breath finally increase tendency of asthma to occur.

most of asthmatic children become cure in age 18-22 years as about 42%in maternity and children hospital, this due to development of immune system together with maturation of their mind to take the necessary instructions, while 10% persistence for live this predicted that they was not taken their medication continuously and may they was with other chronic disease that it difficult the process of cure.

7. Conclusion:

The asthma found in most of the children's in maternity and children's hospital specially who was with genetics and environmental causes.

Some of the children were suffering from a nocturnal asthma, however there was a device for oxygen provision is available in many home which reduced visits to the hospital during night.

Exercise induced asthma in asthmatic children so they have to leave the exercise.

Some drugs induced asthma as paracetamol and beta blocker, so some of children's afraid from taking treatment.

Most of asthmatic children suffering from other chronic diseases as emphysema, chronic bronchitis.

Most of asthmatic children their asthma exacerbated when the climate become dusty so increase the frequency of spells in that night.

Most of asthmatic children become cure in age 18-22 years as about 42% in maternity and children hospital, this due to development of immune system together with maturation of their mind to take the necessary instructions, while 10% persistence for live this predicted that they was not taken their medication continuously and may they was with other chronic disease that it difficult the process of cure.

8. Recommendation:

As the genetics and consanguinity marriage have an important role in asthma between children, so the Ministry of Health should organize educational programs and awareness about the consanguinity marriage across mass media as TV, radio, also through public group education, to explain what the possible serious problems that can occurrence.

Avoidance of environmental exposure is the first step of protection that should be done by asthmatic children's via avoiding any allergen through wearing mask during dusty atmosphere (outdoor allergens) ,be away from chemical substances that can be found at home (indoor allergens) specially that trigger the bronchial asthma.

The asthmatic children who was their asthma exacerbated with exercise should leave the exercise and making walk instead of exercise to maintain their health.

Also doctor should ask asthmatic patient before prescription the beta blocker and paracetamol as these drug exacerbated your asthma previously then can alternate drug by another guard agonist asthma exacerbation.

The asthmatic children who was suffer from another chronic disease as chronic bronchitis and emphysema (chronic obstructive pulmonary disease) should give him extensive continuous care via, regularly primary health care visit, coordinate home visit.

The asthmatic children who was their age in 14 years old should take the necessary instruction of avoiding exposure to allergen, method of treatment, focus on natural diet because this is age it is Because this age is the period that could cure the asthmatic patient.

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